

5 1. Method for preparing high-purity germanium
hydride by electrolysis of an aqueous-alkaline solution,
containing germanium dioxide, at a nickel cathode in a
diaphragm cell at a current density of 1.0-1.5 A/cm² with
subsequent isolation of the germanium hydride from the
10 mixture with hydrogen, the electrolysis being performed
with cross-mixing of electrolyte streams, feeding a
stream of electrolyte from the cathode chamber, after
removal of germanium hydride and hydrogen, into the anode
chamber, and a stream of electrolyte from the anode
15 chamber, after removal of oxygen, into the cathode
chamber, characterized in that an electrical current is
first passed through the aqueous-alkaline solution for
the time needed to achieve the minimum possible content
of contaminants limiting for germanium hydride, after
20 which germanium dioxide is added to the solution in a
concentration of from not less than 40 g/l to the
solubility limit and electrolysis is performed at a
temperature no higher than 65°C.

25 2. Method according to Claim 1, characterized in
that, essentially, germanium dioxide is added to the
solution to a concentration of 50 g/l and electrolysis is
performed at a temperature of 65°C.

30 3. Method according to Claim 1, characterized in
that the germanium hydride is concentrated before
isolation using a gas-diffusion membrane.

4. Method according to Claim 3, characterized in
that the gas-diffusion membrane may be made from
polymeric material, or from metal, or from ceramic.

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subsequent isolation of the germanium hydride from the
mixture with hydrogen, the electrolysis being performed

with cross-mixing of electrolyte streams, feeding a stream of electrolyte from the cathode chamber, after removal of germanium hydride and hydrogen, into the anode chamber, and a stream of electrolyte from the anode chamber, after removal of oxygen, into the cathode chamber, characterized in that an electrical current is first passed through the aqueous-alkaline solution for the time needed to achieve the minimum possible content of contaminants limiting for germanium hydride, after which germanium dioxide is added to the solution in a concentration of from not less than 40 g/l to the solubility limit and electrolysis is performed at a temperature no higher than 65°C, and after isolation the germanium hydride is purified, preferably by the membrane method.

6. Method according to Claim 5, characterized in that, essentially, germanium dioxide is added to the solution to a concentration of 50 g/l and electrolysis is performed at a temperature of 65°C.

7. Method according to Claim 5, characterized in that the germanium hydride is concentrated before isolation using a gas-diffusion membrane.

8. Method according to Claim 5, characterized in that the germanium hydride obtained after isolation is purified using a gas-diffusion membrane.

9. Method according to Claim 8, characterized in that, after purification using a gas-diffusion membrane, the germanium hydride is additionally purified by being passed through an ultrafiltration membrane.

10. Method according to Claim 5 and any of Claims 7-9, characterized in that the membranes may be made from polymeric material, or from metal, or from ceramic.